



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/784,273

02/24/2004

Kazuyoshi Obayashi

118818

8918

25944 7590 06/23/2009

OLIFF & BERRIDGE, PLC

P.O. BOX 320850

ALEXANDRIA, VA 22320-4850

EXAMINER

CLARK, DAVID J

ART UNIT

PAPER NUMBER

3628

MAIL DATE

DELIVERY MODE

06/23/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/784,273	Applicant(s) OBAYASHI ET AL.	
	Examiner DAVID J. CLARK	Art Unit 3628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-41, 44 and 45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-41, 44 and 45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. This action is in reply to the response filed on 27 January 2009.
2. Claim 27 has been amended.
3. Claims 44 and 45 have been added.
4. Claims 27-41, 44, and 45 are currently pending and have been examined.

Response to Arguments

5. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 3628

8. Claims 27-37 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fussey et al. (US PGP 2004/0074682 A1) in view of Gupta (US 5,349,535).

Claim 27:

Fussey et al., as shown, discloses the following limitations:

A method for controlling a vehicular electric system having a plurality of power sources that supplies power to an onboard electrical load and an onboard battery, wherein the plurality of power sources includes a generator driven by an engine of a vehicle (see at least paragraph 0002), the method comprising:

- *obtaining and processing information on a power generation cost that is an amount corresponding to fuel consumption (see at least paragraph 0010, "For example the maximum power of the vehicle may be limited or the vehicle may operate under a higher fuel consumption regime to benefit an emissions of DPF regeneration strategy for city use.") for generating unit power by each power source, (see at least figure 2, paragraphs 0006, 00012, 0032, and 0039).*
- *adjusting a power supply distribution of the plurality of power sources and a receiving power rate of the onboard electrical load or the onboard battery in such a manner that a consumed power cost is reduced, wherein the adjusting is based on the information and performed by prioritizing a power supply from one of the plurality of power sources which has a lowest power generation cost of the plurality of power sources. (see at least paragraphs 0029-0031, 0038-0039, 0042-0043, and 0050).*

Fussey et al. does not disclose the following limitations, but Gupta however, as shown, does:

- *the information further including information on an energy cost of the onboard battery based on charge and discharge histories of the onboard battery;. (see at least column 3, lines 65-68, "the battery supplier would need to take this into account when billing and accounting for the health and usage history (rate and number of charge/discharge cycles) of the pack.").*

Art Unit: 3628

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method of Fussey et al. with the technique of Gupta in order to “provide an improved vehicle that operates on fuel now widely available and uses batteries already well understood and widely available, so that the operator need not learn new driving techniques, deal with new fuel supply arrangements, nor be obliged to be attentive to maintenance of batteries employing complex new technologies.”, (Severinsky et al., column 15, lines 62-67).

Claims 28- 37:

Fussey et al. in view of Gupta, as shown, discloses the limitations of claim 27 above. Moreover, Fussey et al. discloses the following limitations:

(Claim 28) *The method for controlling the vehicular electric system according to claim 27,*

- *wherein the adjusting power supply distribution of the plurality of power sources and the receiving power rate of the onboard electrical load or the onboard battery in such a manner that the consumed power cost is reduced is performed based on the power generation cost of each power source and available power supply from each power source (see at least paragraphs 0029-0031, 0038-0039, 0042-0043, and 0050).*

(Claim 29) *The method for controlling the vehicular electric system according to claim 27, further comprising:*

- *controlling a power generation of each power source based on the power supply distribution (see at least paragraphs 0029-0031, 0038-0039, 0042-0043, and 0050); and*
- *outputting an instruction signal to a device that supplies power to the plurality of power sources for controlling an output of the device based on the power supply distribution (see at least paragraphs 0029-0031, 0038-0039, 0042-0043, and 0050).*

Art Unit: 3628

(Claim 30) *The method for controlling the vehicular electric system according to claim 27, further comprising:*

- *determining the power supply distribution of the plurality of power sources to the onboard battery based on the information (see at least paragraphs 0002 and 0012-0018).*

(Claim 31) *The method for controlling the vehicular electric system according to claim 30, wherein the power supply from the one of the plurality of power sources which has the ~~low~~-lowest power generation cost of the plurality of power sources, is prioritized when the onboard battery is charged (see at least paragraphs 0002 and 0012).*

(Claim 32) *The method for controlling the vehicular electric system according to claim 30, wherein*

- *the plurality of power sources includes an engine of a hybrid vehicle and a regenerative braking system (see at least paragraphs 0002 0029, and 0035).*

(Claim 33) *The method for controlling the vehicular electric system according to claim 32, wherein the power supply of regenerative electric power supplied by the regenerative braking system is prioritized when the onboard battery is charged (see at least paragraphs 0035).*

(Claim 34) *The method for controlling the vehicular electric system according to claim 30, wherein*

- *the adjusting the power supply distribution for supplying power to the onboard battery is performed in accordance with a difference between the power generation cost of the onboard battery as one of the power sources and the power generation cost of another power source that supplies power to the onboard battery (see at least paragraphs 0002, 0006, 0012, 0029-0031).*

(Claim 35) *The method for controlling the vehicular electric system according to claim 34,*

Art Unit: 3628

- *wherein the adjusting the power supply distribution for supplying power to the onboard battery is performed based on the difference between the costs and a state of charge of the onboard battery (see at least paragraphs 0003, 006, 0012, 0029, 0040).*

(Claim 36) *The method for controlling the vehicular electric system according to claim 35,*

- *wherein the state of charge of the onboard battery is determined using an amount of power charged in the onboard battery and a variation in the amount of power (see at least paragraphs 0029, 0040, and 0042).*

(Claim 37) *The method for controlling the vehicular electric system according to claim 30, further comprising:*

- *calculating and preferentially distributing a part of power supplied from the power sources to the electrical load (see at least paragraphs 0002 and 0029); and*
- *calculating and distributing the other part of power to the onboard battery, the other part supplied from the power sources after the distribution to the electrical loads (see at least paragraph 0002).*

Claim 45:

Fussey et al. in view of Gupta, as shown, discloses the limitations of claim 27 above. While Fussey et al. does not explicitly disclose *wherein the cost is defined by an equation of (a unit fuel price) x (fuel consumption per unit power) x (generator efficiency)*, Fussey et al. in at least paragraph 0037 discloses, “the cost represents an objective function combining a measure of a range of parameters into a single value with a combination of, for example, fuel consumption (the higher the fuel consumption the higher the cost) and exhaust emissions (again, the higher the emissions the higher the cost). Of course these variables are preferably normalised and can be combined in any appropriate manner either arithmetically or by a more complex function in order to arrive at a value representative of cost.”

Art Unit: 3628

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in the method of Fussey et al. in view of Gupta the ability *defined by an equation of (a unit fuel price) x (fuel consumption per unit power) x (generator efficiency)*, since the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

9. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fussey et al. in view of Gupta as applied to claim 27 above, and further in view of Severinsky et al. (US 6,554,088 B2).

Claim 38:

Fussey et al. in view of Gupta, as shown, discloses the limitations of claim 27 above.

Fussey et al. in view of Gupta does not disclose the following limitations, but Severinsky et al. however, as shown, does:

- *transferring power between the vehicle electric system and another vehicle electric system in such a manner that voltage of the another vehicle electric system is converted to voltage of the vehicle electric system, wherein the voltage of the another vehicle electric system is different from the voltage of the vehicle electric system (see at least column 35, lines 51-67 through column 35, lines 1-4).*

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Fussey et al. in view of Gupta with the technique of *transferring power between the vehicle electric system and another vehicle electric system in such a manner that voltage of the another vehicle electric system is converted to voltage of the vehicle electric system, wherein the voltage of the another vehicle electric system is different from the voltage of the vehicle electric system* as taught by Severinsky et al. for the advantage of allowing the transfer of voltage between two vehicles.

Art Unit: 3628

10. Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fussey et al. in view of Gupta as applied to claim 27 above, and further in view of Shioriri et al. (US 6,201,312).

Claim 39:

Fussey et al. in view of Gupta, as shown, discloses the limitations of claim 27 above. Moreover, Fussey et al. as shown, discloses the following limitations:

- *obtaining the information concerning a power generation cost of the generator driven by the engine of the vehicle* (see at least paragraphs 0006, 0012, 0037-0039)

Fussey et al. in view of Severinsky et al. does not disclose the following limitations, but Shioriri et al. however, as shown, does:

- *based on engine efficiency at an engine operating point* (see at least figures 10 and 11; column 3, lines 1-37, and column 10, lines 27-55).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Fussey et al. in view of Gupta with the technique of Shioriri et al. for the advantage of determining the optimum setting for the engine that will minimize the fuel consumption of the hybrid car.

Claim 40:

Fussey et al. in view of Gupta and further in view of Shioriri et al., as shown, discloses the limitations of claim 39 above.

Fussey et al. in view of Gupta does not disclose the following limitations, but Shioriri et al. however, as shown, does:

- *correcting the power generation cost based on information of generator efficiency* (see at least column 2, lines 60-63; column 11, lines 12-16; The energy efficiency of the car is improved; therefore, the fuel economy is improved and power generation cost is reduced.).

Art Unit: 3628

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Fussey et al. in view of Gupta with the technique of Shioriri et al. for the advantage of determining the optimum setting for the engine that will minimize the fuel consumption of the hybrid car.

Claim 41:

Fussey et al. in view of Gupta and further in view of Shioriri et al., as shown, discloses the limitations of claim 39 above. Moreover, Fussey et al., as shown, discloses the following limitations:

- *wherein the power generation cost of the generator driven by the engine of the vehicle is determined based on an increase in consumed fuel for driving the engine due to the power generation (see at least paragraphs 0006, 0012, 0013, and 0017).*

11. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fussey et al. in view of Gupta as applied to claim 27 above, and further in view of Saloka et al. (US 2003/0072984 A1).

Claim 44:

Fussey et al. in view of Gupta, as shown, discloses the limitations of claim 27 above.

Fussey et al. in view of Gupta does not disclose the following limitations, but Saloka et al. however, as shown, does:

- *wherein the cost is defined by one of fuel weight, fuel volume, CO₂ generation amount, fuel price, and their combination (see at least paragraph 0007, "However, these additional power sources adversely increase the cost, weight and volume of the fuel cell system, drain the vehicle's battery, and consume electrical energy, which could otherwise be used to power the vehicle's electrical components and accessories. Other prior schemes for pre-heating fuel cells include introducing a hydrogen/air mixture into the process oxidant channels of the fuel*

Art Unit: 3628

cell. However, these prior schemes require complex control systems which undesirably increase the cost and complexity of the vehicle.”).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method of Fussey et al. in view of Gupta with the technique of Saloka et al. because “A power source strategy is implemented in which a cost function is constructed associated with various power distribution options to allows improved distribution of power.” (Fussey et al., Abstract).

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 3628

Conclusion

Any inquiry of a general nature or relating to the status of this application or concerning this communication or earlier communications from the Examiner should be directed to **David J. Clark** whose telephone number is **571.270.3938**. The Examiner can normally be reached on Monday-Friday, 9:30am-5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, **JOHN W. HAYES** can be reached at **571.272.6708**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://portal.uspto.gov/external/portal/pair> <<http://pair-direct.uspto.gov>>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866.217.9197** (toll-free).

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, VA 22313-1450

or faxed to **571-273-8300**.

Hand delivered responses should be brought to the **United States Patent and Trademark**

Office Customer Service Window:

Randolph Building
401 Dulany Street
Alexandria, VA 22314.

/David J Clark/
Examiner, Art Unit 3628

/JOHN W HAYES/
Supervisory Patent Examiner, Art Unit 3628